

REMARKS/ARGUMENTS

Favorable reconsideration of this application is respectfully requested.

Claims 1-5 and 7-20 are present in this application. Claims 1, 15 and 18 are amended by way of the present Amendment. Claims 1, 2, 5, 15, and 18 were rejected under 35 U.S.C. §102(b) over U.S. 5,715,121 (Sakakima et al.) and claim 14 was rejected under 35 U.S.C. §103(a) over Sakakima et al. in view of U.S. 6,839,206 (Saito et al). Claims 3, 4, 7-13, 16, 17, 19 and 20 were found to be allowable if rewritten in independent form. The Applicants gratefully acknowledge the indication that these claims recite patentable subject matter.

The magnetoresistive (MR) element of claim 1 has a structure wherein a nonmagnetic intermediate layer has a stacked structure, in a thickness direction, of a first non-metallic intermediate layer, a metal intermediate layer, and a second non-metallic intermediate layer. Such an MR element has improved properties compared to elements lacking the claimed intermediate such as, for example, higher breakdown voltage.

On the other hand, described in Sakakima et al. is a MR element shown in figure 1 having magnetic films 1 and 3 sandwiched around a non-magnetic film 2. Film 2 consists of a mixture of an insulator 21 and an electrical conductor 22 (see figure 2A and col. 3, lines 40-51). Insulator 21 and conductor are alternately arranged in an in-plane direction. The Office Action considers film 2 as "having a stacked structure." However, even if film 2 of Sakakima et al. could be considered stacked, there is clearly no disclosure or suggestion in Sakakima et al. of the intermediate layer of claim 1 having a stacked structure of a first non-metallic intermediate layer/a metal intermediate layer/a second non-metallic intermediate layer which are stacked in a thickness direction. The MR element of claim 1 is clearly different from the MR element of Sakakima et al. Accordingly, claim 1 is patentable over Sakakima et al.

Claim 15 recites a magnetic recording head having an MR film with a nonmagnetic intermediate layer formed between a magnetization pinned layer and a magnetization free layer and having a stacked structure of a first non-metallic intermediate layer/a metal intermediate layer/a second non-metallic intermediate layer which are stacked in a thickness direction. Sakakima et al. discloses a recording head in figure 7 having an MR element 21 with films 1, 2 and 3 described above. Thus, there is no disclosure of the recording head of claim 15 in Sakakima et al. Claim 15 is also patentable over Sakakima et al.

Claim 18 recites a magnetic reproducing apparatus having an MR film with a nonmagnetic intermediate layer formed between a magnetization pinned layer and a magnetization free layer and having a stacked structure of a first non-metallic intermediate layer/a metal intermediate layer/a second non-metallic intermediate layer which are stacked in a thickness direction. Sakakima et al. discloses a memory device in figure 8 having an MR element 21 with films 1, 2 and 3 described above. There is, thus, also no disclosure of the apparatus of claim 18 in Sakakima et al. Claim 18 is also patentable over Sakakima et al.

Saito et al. is cited for a nonferromagnetic film and does not cure the deficiencies noted above in Sakakima et al.

It is respectfully submitted that the present application is in condition for allowance, and a favorable decision to that effect is respectfully requested.

Respectfully submitted,

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